

REMARKS

Claims 1-5 are pending in the application. Claims 3 and 4 are withdrawn from consideration. Claims 1, 2 and 5 are rejected.

SPECIFICATION:

The Examiner objects to the Abstract because of the word “means.” Applicants hereby amend the Abstract to remove the language objected to by the Examiner. The word “a” is also removed from claims 1 and 5 (before the word “trouble”) to merely clarify the language.

35 U.S.C. § 102:

Claims 1, 2 and 5 are rejected under 35 U.S.C. § 102(b) as being anticipated by Kade et al. (U.S. Patent No. 4,509,611 [hereinafter “Kade”]).

As an initial matter, Applicants respectfully submit that the Office has a duty to indicate how it believes a reference anticipates a claim. In this case, the rejection does not point to any specific portion of Kade, but simply cites columns “1-14” (almost every column of Kade) and repeats the claimed features. In view of the below comments, Applicants believe that the rejection should be overcome; however, if it is maintained for any reason, Applicants respectfully request the Examiner to specify what portion of Kade he is applying against each of the claimed features.

The present invention provides a unique and unobvious motor-driven power steering control apparatus, including features neither taught nor suggested by the applied art. As noted in the present specification, conventional motor-driven power steering control apparatuses have suffered during the occurrence of trouble. In particular, conventional steering control

apparatuses suffer in the sense that when trouble is detected (i.e., the driver makes a quick turn or the vehicle's wheel drops into a rut), a motor drive command value is increased instantaneously and this increased value is stored as an initial value. This initial value is then decremented. However, such a feature causes the driver to feel discomfort because the steering wheel becomes either light or heavy when compared with ordinary steering. (See present specification, first full paragraph, page 2.)

The present invention provides a motor-driven power steering control apparatus that differs from the conventional control apparatuses, as well as Kade. In an exemplary embodiment of the present specification, a predetermined motor drive command value is stored in a storage means as an initial value to be decremented. By virtue of this feature, when trouble of the control apparatus is detected, a decremenating of the motor drive command value is not started from a large, instantaneously increased value and the driver does not feel steering discomfort as in the prior art.

Turning to the language of claim 1, recited is, *inter alia*:

"trouble detecting means designed for outputting a trouble detection signal upon detection of trouble in said motor-driven power steering control apparatus;

motor drive command value corrected means for processing said motor drive command value so that said motor drive command value is decremented from a predetermined initial value as a function of time lapse when the trouble detection signal is outputted from said trouble detecting means; and

motor driving means for driving said assist motor on the basis of the motor drive command value outputted from said motor drive command value correcting means;

...wherein said motor drive command value correcting means is so designed as to employ as said predetermined initial value a value whose maximum is previously limited."

At least these features are not disclosed by Kade. In particular, Kade discloses that prior devices are not practical because of a "dead zone" that is defined around a mean value, such that minor deviations from the mean value are not recognized by the controller. Prior devices also suffer from transducer mis-calibration, drift and wear. (See column 1, lines 32-36 of Kade.) Therefore, an object of Kade is to provide a controller that is responsive to transducer output without the use of a dead zone and which compensates for drift, wear, etc. (See column 1 lines 50-61 of Kade.)

Kade discloses to eliminate the dead zone and compensate for transducer output signal variations by "shifting the zero torque reference to reduce a difference between the zero torque reference and the transducer output signal." (See column 6, line 65-column 7, line 5.) Kade discloses that this feature causes the value of the zero torque reference to more closely correspond to the actual value of the transducer output signal for which no steering torque is exerted by the operator of the vehicle.

Applicants respectfully submit that Kade does not disclose that a motor drive command value is *decremented from a predetermined initial value as a function of time lapse when a trouble detection signal* is outputted from the trouble detecting means, as recited in claim 1. First, Kade does not provide a "trouble detection signal." It naturally follows that Kade does not disclose the claimed "motor drive command value corrected means for processing said motor drive command value so that said motor drive command value is decremented from a

predetermined initial value as a function of time lapse when the *trouble detection signal* is outputted from said *trouble detecting means*," as recited in claim 1.

Therefore, for at least this reason, Applicants respectfully submit that Kade does not disclose the features of claim 1. Applicants also submit that independent claim 5 is not anticipated by Kade for similar reasons.

Further, Kade does not disclose the claimed *smoothing means* for smoothing said motor drive command value outputted from said motor drive command value arithmetic means, as recited in claim 1. If the Examiner disagrees, he is respectfully requested to point out where this feature is disclosed. Moreover, claim 1 recites that a value acquired through the smoothing means is employed as *the predetermined initial value*. Kade also does not disclose this feature. Instead, Kade teaches to shift a zero torque reference point to reduce a difference between the zero torque reference and a transducer output signal, in an effort to eliminate a dead zone.

Accordingly, Applicants respectfully submit that each feature recited in claim 1 is not disclosed by Kade. Applicants also submit that the features of claim 2 are not disclosed by Kade. Claim 2 recites that smoothing means is implemented as a low-pass filter capable of dynamically changing over frequency filtering characteristics. Applicants submit that Kade does not disclose this feature. If the Examiner disagrees for any reason, he is respectfully requested to point out where this feature is found in Kade.

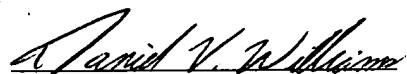
In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Application No.: 10/754,709

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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